Mutagenic Evaluation of Compound FDA 73-78 **Potassium Chloride USP Granular**
6/30/75

G/O

LBI PROJECT #2468

MUTAGENIC EVALUATION OF

COMPOUND FDA 73-78

007447407

POTASSIUM CHLORIDE
USP GRANULAR

SUBMITTED TO

FOOD & DRUG ADMINISTRATION
DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
ROCKVILLE, MARYLAND

SUBMITTED BY

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JUNE 30, 1975

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EVALUATION SUMMARY

Compound FDA 73-78, Potassium Chloride USP Granular, did not exhibit genetic activity in any of the *in vitro* microbial assays employed in this evaluation.

DATE: June 30, 1975

SPONSOR: Food and Drug Administration, Contract Number 223-74-2104

SUBJECT: Evaluation of Test Compound 007447407 Potassium Chloride USP Granular FDA 73-78

I. OBJECTIVE

The objective of this study was to evaluate the test compound for genetic activity in microbial assays with and without the addition of mammalian metabolic activation preparations.

II. MATERIALS

A. Test Compound

1. Date Received: August, 1974

2. Description: White granular crystals

B. Indicator Microorganisms

The following strains of indicator microorganisms were used in the evaluation:

Yeast Strain: Saccharomyces cerevisiae, strain D4

Bacteria Strains: Salmonella typhimurium, strains: TA-1535
TA-1537
TA-1538

C. Reaction Mixture

The following reaction mixture was employed in the activation tests:

Component	Final Concentration/ml
1. TPN (sodium salt)	6 μM
2. Isocitric acid	49 μM
3. Tris buffer, pH 7.4	28 μM
4. $MgCl_2$	1.7μM
5. Tissue homogenate fraction	72 mg

D. Tissue Homogenates and Supernatants

The tissue homogenates and 9,000 x g supernatants were prepared from tissues of the following mammalian species: Mouse-ICR random bred adult males; rat-Sprague-Dawley adult males; and primate-Macaca mulatta adult males.

E. Positive Control Compounds

Table 1 lists chemicals for positive controls in the direct and activation assays.

TABLE 1

POSITIVE CONTROLS USED IN DIRECT AND ACTIVATION ASSAYS

Assay	Chemical[a]	Solvent	Probable Mutagenic Specificity
Nonactivation	Ethyl methanesulfonate	Water or saline	BPS[b]
	2-Nitrofluorene	Dimethylsulfoxide[c]	FS[b]
	Quinacrine mustard	Water or saline	FS[b]
Activation	Dimethylnitrosamine	Water or saline	BPS[b]
	2-Acetylaminofluorene	Dimethylsulfoxide[c]	FS[b]

[a] Concentrations given in the Results Section
[b] BPS = base-pair substitution; FS = frameshift
[c] Previously shown to be non-mutagenic

III. METHODS

A. Toxicity

The solubility, toxicity and doses for all chemicals were determined prior to screening.

Each chemical was tested for survival against the specific indicator strains over a range of doses to determine the 50% survival dose. Bacteria were tested in phosphate buffer, pH 7.4, for one hour at 37°C on a shaker. Yeasts were tested in phosphate buffer, pH 7.4, for four hours at 30°C on a shaker. The 50% survival curve and the 1/4 and 1/2 50% doses calculated.

If no toxicity was obtained for a chemical with a given strain, then a maximum dose of 5% (w/v) was used against the strain.

Unless otherwise specified, the doses calculated for the tests in buffer were applied to the activation tests. The solubility of the test chemical under treatment conditions is stated in the Results Section.

B. Plate Tests

In the nonactivation procedure, approximately 10^9 cells of a log phase culture of the bacterial indicator strains were spread over the surface of a minimal plate, and a measured amount of the test chemical was placed in the center of the test plate. In activation tests, the test chemical was added to the cells, and an aliquot of the mixture was spread on the surface of the test plate. The reaction mixture (0.1 ml) plus tissue extract was then spotted on the surface of the plate. Positive and solvent controls were included. All plates were incubated at 37°C for four days and then scored. Each compound (Test, Positive Control and Solvent Control) was done in duplicate. Concentrations of the positive control compounds are listed in the Results Section.

C. Suspension Tests

1. Nonactivation

Log-phase bacteria and stationary-phase yeast cultures of the indicator organisms were grown in complete broth, washed and resuspended in 0.9% saline to densities of 1×10^9 cells/ml and 5×10^7 cells/ml, respectively. This constituted the working stock for tests of a group of test chemicals and their respective controls. Tests were conducted in plastic tissue culture plates. Cells plus appropriate volume(s) of the test chemical were added to the wells to give a final volume of 1.5 ml. The solvent replaced the test chemical in the negative controls. Treatment was at 30°C for four hours for yeast tests and at 37°C for one hour for bacterial tests. All flasks were shaken during treatment. Following treatment, the plates were set on ice. Aliquots of cells were removed, diluted in sterile saline (4°C) and plated on the appropriate complete media. Undiluted samples from flasks containing the bacteria were plated on minimal selective medium in reversion experiments. Samples from a 10^{-1} dilution of treated cells were plated on the selected media for enumeration of gene conversion with strain D4. Bacterial plates were scored after incubation for 48 hours at 37°C. The yeast plates were incubated at 30°C for 3-5 days before scoring.

2. Activation

Bacteria and yeast cells were grown and prepared as described in the nonactivation tests. Measured amounts of the test and control chemicals plus 0.25 ml of the stock-cell suspension were added to wells of the Linbro plate containing the appropriate tissue fraction and reaction mixture. All flasks (bacteria and yeast) were incubated at 37°C in an oxygen atmosphere with shaking. The treatment times as well as the dilutions, plating procedures and scoring of the plates were the same as described for nonactivation tests.

D. Preparation of Tissue Homogenates and 9,000 x g Cell Fractions

Male animals (sufficient to provide the necessary quantities of tissues) were killed by cranial blow, decapitated and bled. Organs were immediately dissected from the animal using aseptic techniques and placed in ice-cold 0.25 M sucrose buffered with Tris at pH of 7.4. Upon collection of the desired quantity of organs, they were washed twice with fresh buffered sucrose and completely homogenized with a motor-driven homogenizing unit at 4°C. The whole organ homogenate obtained from this step was divided into two samples. One sample was frozen at -80°C and the other was centrifuged for 20 minutes at 9,000 x g in a refrigerated centrifuge. The supernatant from the centrifuged sample was retained and frozen at -80°C. These two frozen samples were used for the activation studies.

E. Data Recording and Reporting

Following the specified incubation periods all population plates were scored by an automatic colony counter and the results from each plate of a set were recorded, in ink, on data processing forms. All minimal or other types of selective media plates were hand scored and the results recorded along with the respective population data. Other relevant experimental data were recorded on experimental definition forms. For bacteria strains the number of colonies recorded from either the population or selective plates represents that number in 1 ml of test suspension plated. The numbers recorded for the yeast strain D4 represent the number in 0.5 ml of test suspension plated. The data were then processed and printed from a computer program.

IV. RESULTS SECTION

A. Solubility Properties of the Test Compound

1. Name or code designation of the test compound: 007447407 Potassium Chloride

2. Test solvent: Saline

3. Solubility of the test compound under treatment conditions: Insoluble under treatment conditions.

4. Additional comments: White granular crystals

B. Toxicity and Dosage Determinations for the Test Compound

1. Test date for toxicity determination: April 11, 1975

2. The 50% survival level was determined for bacteria and yeast indicator organisms by conducting survival curves with the test compound at the following concentrations:

Percent Concentration (w/v or v/v)

10.0
1.0
0.1
0.01
0.001

3. Concentrations of the test compound used in the mutagenicity tests:

Dose	Percent Concentration	
	Bacteria	Yeast
1/4 50% Survival	1.75	2.5
1/2 50% Survival	3.50	5.0
50% Survival	7.00	10.0
Plate Tests	3.50	--

V. SUMMARY OF TEST RESULTS

Plate Tests

A. Name or code designation of the test compound: 007447407

B. Test date: April 25, 1975

C. Concentration of the test compound: 3.5%

Test	Species	Tissue	REVERTANTS/PLATE TA-1535 1	TA-1535 2	TA-1537 1	TA-1537 2	TA-1538 1	TA-1538 2
1. Non-activation								
Solvent Control	---	---	40	41	11	13	27	23
Positive Control[a]	---	---	>10^3	>10^3	183	113	98	129
Test Compound	---	---	54	32	13	12	26	21
2. Activation								
Negative Control	---	---	8	12	7	7	6	18
Solvent Control	---	---	13	4	15	16	23	21
Reaction Mixture Control	---	---	7	10	8	8	10	18
Positive Control[b]	Mouse	Liver	> 10^3	>10^3	41	43	307	340
Positive Control		Lung	11	13	5	12	72	30
Positive Control		Testes	9	11	22	10	19	22
Positive Control	Rat	Liver	>10^3	>10^3	41	45	327	340
Positive Control		Lung	12	9	7	7	26	29
Positive Control		Testes	9	11	16	10	14	11
Positive Control	Monkey	Liver	390	329	44	41	363	310
Positive Control		Lung	11	9	7	10	21	24
Positive Control		Testes	9	12	16	6	17	12
Test Compound	Mouse	Liver	18	19	16	7	25	31
Test Compound		Lung	22	23	12	13	16	20
Test Compound		Testes	17	24	9	10	24	26
Test Compound	Rat	Liver	17	17	16	12	14	21
Test Compound		Lung	25	17	10	12	16	19
Test Compound		Testes	17	29	9	8	18	25
Test Compound	Monkey	Liver	18	19	18	11	23	19
Test Compound		Lung	22	14	11	11	17	13
Test Compound		Testes	15	22	8	8	13	21

a TA-1535 EMS 10 µl/plate
TA-1537 QM 20 µg/plate
TA-1538 NF 100 µg/plate

b TA-1535 DMNA 50 µM/plate
TA-1537 AAF 100 µg/plate
TA-1538 AAF 100 µg/plate

DATA TABLE TERMS AND ABBREVIATIONS

ABBREVIATION OR TERM	DEFINITION OR EXPLANATION
COMPOUND	Client designated compound number appears in this column.
TEST CODES	NAN = Nonactivation: Solvent Control NAP = Nonactivation: Positive Control NA1 = Nonactivation: Test Compound Dose 1 NA2, etc. = Reflects the other dose level(s) A+C = Negative Chemical Control A-C = Activation: Solvent Control ACP = Activation: Positive Control ACT = Activation: Test Compound A+T = Activation: Tissue Control LI = Liver Tissue Activation Fraction LU = Lung Tissue Activation Fraction KI = Kidney Tissue Activation Fraction TE = Testes Tissue Activation Fraction 1,2, etc. = Dose Levels
CONCENTRATION	All test compound dose levels are expressed as a whole number followed by an exponent (negative) identified by the appropriate units. Example: 0025-2PCT = 0.25 percent concentration
POPU	Total number of viable cells in the plating sample raised to some exponent printed directly below the abbreviation (i.e., EP + 6 = x 10^6).
MUT 1	Total number of mutants or convertants obtained from the sample plated raised to some exponent printed directly below the abbreviation (i.e., EP + 0 = 10^0). For strain D4, MUT 1 represents the number of ADE+ convertants.
MUT 2	Only used for strain D4 and represents the number of TRY+ convertants in the plated sample.
FREQ 1	The calculated mutation or gene conversion frequency times the negative exponent written directly below. For strain D4, FREQ 1 represents the ADE+ value.
FREQ 2	Only used for strain D4 and represents the TRY+ conversion frequency.
CONTAM	Presence of contamination on any plates.

DATA TABLE TERMS AND ABBREVIATIONS (continued)

ABBREVIATION OR TERM	DEFINITION OR EXPLANATION
AAF	2-Acetylaminofluorene
DMSO	Dimethylsulfoxide
DMN	Dimethylnitrosamine
EMS	Ethyl Methanesulfonate
QM	Quinacrine Mustard
NF	Nitrofluorene
SPECIES	Animal Strains
SPRDAW	Sprague Dawley Rats
ICRFLO	Flow ICR Random Bred Mice
RHESUS	Rhesus Monkey (Macaca mulatta)
MIXEDB	Dog, Mixed Breed
NEWZEA	New Zealand White Rabbit

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES / COMPOUND 007447407

TEST	ORG	TA1538 HIS EX-8	TA1535 HIS EX-8	TA1537 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
NAN		8.10	5.93	2.32	1.21	1.69
NAP		256.53	145.25	54.95	102.54	192.66
NA1		9.69	6.68	0.74	2.44	1.07
NA2		8.57	6.71	1.57	1.76	0.64

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES ICRFLO/MOUSE COMPOUND 007447407

TEST	ORG	TA1535 HIS EX-8	TA1538 HIS EX-8	TA1537 HIS EX-8	TA1537 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C	25.16	5.49		10.13	3.11	2.43		
ACT	A+T	10.85	19.43		7.69	3.17	3.04		
ACT	A-C	30.64	4.80	18.48	11.85	1.46	2.47	3.72	3.44
ACT	PLI	99.45	96.04		20.85	4.07	7.05		
ACT	PLU	32.03	9.09		15.03	2.32	2.32		
ACT	PTE	23.13	12.00		7.90	3.94	1.69		
ACT	LI1	18.97	16.48	10.22	23.75	4.86	7.73	1.54	2.05
ACT	LI2	11.81	15.58		10.53	5.26	6.32	2.68	2.58
ACT	LU1	12.80	6.67		10.08	3.20	2.22		
ACT	LU2	23.52	6.02		14.20	4.99	2.63		
ACT	TE1	15.62	10.78		16.42	3.96	2.73		
ACT	TE2	31.74	8.84		12.46	3.66	2.59		

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LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES SPRDAW/RAT COMPOUND 007447407

TEST	ORG	TA1538 HIS EX-8	TA1537 HIS EX-8	TA1535 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C	5.08	25.00	4.13	2.42	1.16
ACT	A+T	11.94	16.99	19.55	1.31	1.19
ACT	A-C	4.90	10.34	3.40	1.19	1.39
ACT	PLI	25.88	23.46	655.87	6.42	8.88
ACT	PLU	9.79	15.63	5.92	2.53	3.29
ACT	PTE	7.41	13.52	11.07	2.51	2.16
ACT	LI1	11.07	6.04	3.37	2.90	1.56
ACT	LI2	7.76	16.57	4.24	2.32	0.85
ACT	LU1	4.01	8.84	6.56	2.61	1.66
ACT	LU2	13.65	5.55	6.72	2.58	1.85
ACT	TE1	4.01	7.17	3.37	3.50	2.03
ACT	TE2	8.55	21.95	4.48	3.62	2.04

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES RHESUS/MONKEY COMPOUND 007447407

TEST	ORG	TA1537 HIS EX-8	TA1537 HIS EX-8	TA1538 HIS EX-8	TA1535 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C		17.39	5.15	13.57	2.10	1.65
ACT	A+T		33.71	7.48	7.81	2.38	1.70
ACT	A-C	12.53	15.22	1.80	8.46	1.31	2.15
ACT	PLI		57.35	13.89	165.66	2.46	1.74
ACT	PLU		18.75	3.05	7.04	2.78	2.16
ACT	PTE		18.10	3.81	7.46	3.99	2.07
ACT	LI1	15.61	31.46	11.11	7.97	2.97	3.32
ACT	LI2	9.11	28.00	5.77	5.73	2.16	0.46
ACT	LU1		14.81	2.91	7.63	1.54	2.81
ACT	LU2		17.17	3.62	6.86	2.18	2.34
ACT	TE1		15.00	6.13	13.58	1.47	1.35
ACT	TE2		16.17	3.79	12.51	1.08	2.57

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VI. INTERPRETATION OF RESULTS AND CONCLUSIONS

Compound 007447407, Potassium Chloride USP Granular, was tested for genetic activity in a series of *in vitro* microbial assays with and without metabolic activation. The following results were obtained:

A. *Salmonella typhimurium*

1. Plate tests

At a concentration of 3.5%, 007447407, was not mutagenic for any of the bacterial indicator strains with or without activation.

2. Nonactivation suspension tests

The results of these tests were negative.

3. Activation suspension tests

The results of these tests were considered to be negative. The LI1 dose with TA-1537 using mouse tissue and the LI1 and LI2 doses with TA-1537 using monkey tissue were slightly increased. The repeat tests were negative. It was noted that the TA-1535 spontaneous was higher than usual in the tests using mouse tissues. The particular stock culture had a high background and was replaced.

B. *Saccharomyces cerevisiae*

1. Nonactivation suspension tests

The results of these tests were negative.

2. Activation suspension tests

The overall results of these tests were considered negative although slight increases in recombinogenic activity were observed for the LI1 and LI2 doses with mouse liver. Neither rat or monkey tissues indicated activation of the chemical in D4 tests. Repeat tests of the LI1 and LI2 doses using mouse tissue were negative.

C. Conclusions

The test compound, Potassium Chloride USP Granular, did not exhibit genetic activity in the *in vitro* assays employed in this evaluation. It was noted in several of the tests using mouse and monkey tissues that in the initial runs, the mutation or recombination frequencies for one or more

the LI1 and LI2 dose levels were slightly increased especially with strain TA-1537. Repeat tests of these dose levels were negative, however, and it was concluded that the overall responses did not represent definitive evidence to conclude that this chemical possessed genetic activity.

Submitted by:

David Brusick

David Brusick, Ph.D.
Director of Genetics

APPENDIX

Tabulation of Data

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 512904 DETECTOR TA1535 SPECIES / DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		SALINE	0910	0054	5.93	0
	NAP		EMS 0.002 %	0853	1239	145.25	0
007447407	NA1		0035-1 PCT.	0674	0045	6.68	0
007447407	NA2		0175-2 PCT.	0671	0045	6.71	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515502 DETECTOR TA1537 SPECIES / DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		SALINE	0345	0008	2.32	0
	NAP		QM 1.0 UG/ML	0424	0233	54.95	0
007447407	NA1		0035-1 PCT.	0271	0002	0.74	0
007447407	NA2		0175-2 PCT.	0319	0005	1.57	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 512903 DETECTOR TA1538 SPECIES / DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
007447407	NA1		0035-1 PCT.	0423	0041	9.69	0
007447407	NA2		0175-2 PCT.	0467	0040	8.57	0
	NAN		DMSO	0506	0041	8.10	0
	NAP		NF 125 UG-ML	0444	1139	256.53	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515604 DETECTOR 0000D4 SPECIES / DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	NAN		SALINE	0828	0010	0014	1.21	1.69	0
	NAP		EMS 1.0 %	0354	0363	0682	102.54	192.66	5
007447407	NA1		0005-0 PCT.	0655	0016	0007	2.44	1.07	0
007447407	NA2		0025-1 PCT.	0625	0011	0004	1.76	0.64	4

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515606 DETECTOR TA1535 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	2047	0515	25.16	0
	A+T		***NO MATCH***	1253	0136	10.85	2
	A-C		SALINE	1671	0512	30.64	0
	ACP	LI	DMN 50 UM/ML	1276	1269	99.45	2
	ACP	LU	DMN 50 UM/ML	1564	0501	32.03	0
	ACP	TE	DMN 50 UM/ML	2240	0518	23.13	0
007447407	ACT	LI1	0035-1 PCT.	1666	0316	18.97	2
007447407	ACT	LI2	0175-2 PCT.	2354	0278	11.81	0
007447407	ACT	LU1	0035-1 PCT.	2023	0259	12.80	0
007447407	ACT	LU2	0175-2 PCT.	2432	0572	23.52	2
007447407	ACT	TE1	0035-1 PCT.	1773	0277	15.62	0
007447407	ACT	TE2	0175-2 PCT.	2158	0685	31.74	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 517001 DETECTOR TA1537 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0800	0081	10.13	0
	A+T		***NO MATCH***	0273	0021	7.69	3
	A-C		DMSO	0464	0055	11.85	0
	ACP	LI	AAF 800 UG/ML	0470	0098	20.85	0
	ACP	LU	AAF 800 UG/ML	0366	0055	15.03	0
	ACP	TE	AAF 800 UG/ML	0633	0050	7.90	2
007447407	ACT	LI1	0035-1 PCT.	0299	0071	23.75	0
007447407	ACT	LI2	0175-2 PCT.	0674	0071	10.53	2
007447407	ACT	LU1	0035-1 PCT.	0595	0060	10.08	2
007447407	ACT	LU2	0175-2 PCT.	0486	0069	14.20	0
007447407	ACT	TE1	0035-1 PCT.	0469	0077	16.42	0
007447407	ACT	TE2	0175-2 PCT.	0634	0079	12.46	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 517502 DETECTOR TA1537 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A-C		DMSO	0395	0073	18.48	0
007447407	ACT	LI1	0035-1 PCT.	0499	0051	10.22	1

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515501 DETECTOR TA1538 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0364	0020	5.49	1
	A+T		***NO MATCH***	0211	0041	19.43	1
	A-C		DMSO	0229	0011	4.80	1
	ACP	LI	AAF 800 UG/ML	0227	0218	96.04	1
	ACP	LU	AAF 800 UG/ML	0231	0021	9.09	1
	ACP	TE	AAF 800 UG/ML	0275	0033	12.00	1
007447407	ACT	LI1	0035-1 PCT.	0176	0029	16.48	0
007447407	ACT	LI2	0175-2 PCT.	0154	0024	15.58	0
007447407	ACT	LU1	0035-1 PCT.	0150	0010	6.67	0
007447407	ACT	LU2	0175-2 PCT.	0166	0010	6.02	1
007447407	ACT	TE1	0035-1 PCT.	0167	0018	10.78	1
007447407	ACT	TE2	0175-2 PCT.	0215	0019	8.84	1

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515407 DETECTOR 0000D4 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	0740	0023	0018	3.11	2.43	3
	A+T		***NO MATCH***	0756	0024	0023	3.17	3.04	7
	A-C		SALINE	0892	0013	0022	1.46	2.47	6
	ACP	LI	DMN 90 UM/ML	0738	0030	0052	4.07	7.05	6
	ACP	LU	DMN 90 UM/ML	0734	0017	0017	2.32	2.32	0
	ACP	TE	DMN 90 UM/ML	0710	0028	0012	3.94	1.69	3
007447407	ACT	LI1	0005-0 PCT.	0556	0027	0043	4.86	7.73	6
007447407	ACT	LI2	0025-1 PCT.	0665	0035	0042	5.26	6.32	6
007447407	ACT	LU1	0005-0 PCT.	0812	0026	0018	3.20	2.22	0
007447407	ACT	LU2	0025-1 PCT.	0722	0036	0019	4.99	2.63	2
007447407	ACT	TE1	0005-0 PCT.	0735	0029	0020	3.96	2.73	0
007447407	ACT	TE2	0025-1 PCT.	0848	0031	0022	3.66	2.59	0

Litton BIONETICS

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468

EXPERIMENT 520601 DETECTOR 0000D4 SPECIES ICRFLO/MOUSE DATE - 07/25-75

COMPOUND	TEST	ORG ID	CONCENTRATION	POP EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A-C		SALINE	0698	0026	0024	3.72	3.44	0
007447407	ACT	LI1	0005-0 PCT.	0974	0015	0020	1.54	2.05	0
007447407	ACT	LI2	0025-1 PCT.	0932	0025	0024	2.68	2.58	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 513401 DETECTOR TA1535 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	0460	0019	4.13	2
	A+T		***NO MATCH***	0312	0061	19.55	2
	A-C		SALINE	0764	0026	3.40	0
	ACP	LI	DMN 50 UM/ML	0315	2066	655.87	2
	ACP	LU	DMN 50 UM/ML	0287	0017	5.92	0
	ACP	TE	DMN 50 UM/ML	0253	0028	11.07	2
007447407	ACT	LI1	0035-1 PCT.	0534	0018	3.37	2
007447407	ACT	LI2	0175-2 PCT.	0542	0023	4.24	2
007447407	ACT	LU1	0035-1 PCT.	0457	0030	6.56	0
007447407	ACT	LU2	0175-2 PCT.	0536	0036	6.72	0
007447407	ACT	TE1	0035-1 PCT.	0564	0019	3.37	2
007447407	ACT	TE2	0175-2 PCT.	0558	0025	4.48	2

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515404 DETECTOR TA1537 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPJ EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0432	0108	25.00	0
	A+T		***NO MATCH***	0153	0026	16.99	0
	A-C		DMSO	0812	0084	10.34	0
	ACP	LI	AAF 800 UG/ML	0243	0057	23.46	0
	ACP	LU	AAF 800 UG/ML	0288	0045	15.63	2
	ACP	TE	AAF 800 UG/ML	0318	0043	13.52	0
007447407	ACT	LI1	0035-1 PCT.	0778	0047	6.04	0
007447407	ACT	LI2	0175-2 PCT.	0350	0058	16.57	0
007447407	ACT	LU1	0035-1 PCT.	0498	0044	8.84	0
007447407	ACT	LU2	0175-2 PCT.	0649	0036	5.55	0
007447407	ACT	TE1	0035-1 PCT.	0530	0038	7.17	0
007447407	ACT	TE2	0175-2 PCT.	0369	0081	21.95	0

Litton BIONETICS

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 514804 DETECTOR TA1538 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0512	0026	5.08	0
	A+T		***NO MATCH***	0268	0032	11.94	0
	A-C		DMSO	0449	0022	4.90	0
	ACP	LI	AAF 800 UG/ML	0510	0132	25.88	0
	ACP	LU	AAF 800 UG/ML	0613	0060	9.79	0
	ACP	TE	AAF 800 UG/ML	0634	0047	7.41	0
007447407	ACT	LI1	0035-1 PCT.	0307	0034	11.07	2
007447407	ACT	LI2	0175-2 PCT.	0219	0017	7.76	2
007447407	ACT	LU1	0035-1 PCT.	0349	0014	4.01	2
007447407	ACT	LU2	0175-2 PCT.	0337	0046	13.65	0
007447407	ACT	TE1	0035-1 PCT.	0399	0016	4.01	0
007447407	ACT	TE2	0175-2 PCT.	0491	0042	8.55	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 514703 DETECTOR 0000D4 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	0951	0023	0011	2.42	1.16	0
	A+T		***NO MATCH***	0841	0011	0010	1.31	1.19	2
	A-C		SALINE	1010	0012	0014	1.19	1.39	0
	ACP	LI	DMN 90 UM/ML	0732	0047	0065	6.42	8.88	6
	ACP	LU	DMN 90 UM/ML	0791	0020	0026	2.53	3.29	2
	ACP	TE	DMN 90 UM/ML	0878	0022	0019	2.51	2.16	6
007447407	ACT	LI1	0035-1 PCT.	0898	0026	0014	2.90	1.56	0
007447407	ACT	LI2	0175-2 PCT.	0819	0019	0007	2.32	0.85	0
007447407	ACT	LU1	0035-1 PCT.	0844	0022	0014	2.61	1.66	0
007447407	ACT	LU2	0175-2 PCT.	0813	0021	0015	2.58	1.85	0
007447407	ACT	TE1	0035-1 PCT.	0886	0031	0018	3.50	2.03	6
007447407	ACT	TE2	0175-2 PCT.	0884	0032	0018	3.62	2.04	6

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 517501 DETECTOR TA1535 SPECIES RHESUS/MONKEY DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	0715	0097	13.57	0
	A+T		***NO MATCH***	0704	0055	7.81	0
	A-C		SALINE	0709	0060	8.46	0
	ACP	LI	DMN 50 UM/ML	0862	1428	165.66	2
	ACP	LU	DMN 50 UM/ML	0796	0056	7.04	0
	ACP	TE	DMN 50 UM/ML	0731	0056	7.46	0
007447407	ACT	LI1	0035-1 PCT.	0590	0047	7.97	0
007447407	ACT	LI2	0175-2 PCT.	0838	0048	5.73	2
007447407	ACT	LU1	0035-1 PCT.	0891	0068	7.63	0
007447407	ACT	LU2	0175-2 PCT.	0977	0067	6.86	0
007447407	ACT	TE1	0035-1 PCT.	0913	0124	13.58	0
007447407	ACT	TE2	0175-2 PCT.	0895	0112	12.51	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 514901 DETECTOR TA1537 SPECIES RHESUS/MONKEY DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0069	0012	17.39	0
	A+T		***NO MATCH***	0089	0030	33.71	2
	A-C		DMSO	0046	0007	15.22	1
	ACP	LI	AAF 800 UG/ML	0068	0039	57.35	1
	ACP	LU	AAF 800 UG/ML	0128	0024	18.75	0
	ACP	TE	AAF 800 UG/ML	0116	0021	18.10	2
007447407	ACT	LI1	0035-1 PCT.	0089	0028	31.46	1
007447407	ACT	LI2	0175-2 PCT.	0125	0035	28.00	1
007447407	ACT	LU1	0035-1 PCT.	0081	0012	14.81	1
007447407	ACT	LU2	0175-2 PCT.	C099	0017	17.17	1
007447407	ACT	TE1	0035-1 PCT.	0120	0018	15.00	1
007447407	ACT	TE2	0175-2 PCT.	0167	0027	16.17	1

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515403 DETECTOR TA1537 SPECIES RHESUS/MONKEY DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A-C		DMSO	0375	0047	12.53	0
007447407	ACT	LI1	0035-1 PCT.	0301	0047	15.61	0
007447407	ACT	LI2	0175-2 PCT.	0406	0037	9.11	0

Litton BIONETICS

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 514803 DETECTOR TA1538 SPECIES RHESUS/MONKEY DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0505	0026	5.15	0
	A+T		***NO MATCH***	0481	0036	7.48	3
	A-C		DMSO	0610	0011	1.80	0
	ACP	LI	AAF 800 UG/ML	0893	0124	13.89	0
	ACP	LU	AAF 800 UG/ML	1179	0036	3.05	0
	ACP	TE	AAF 800 UG/ML	0998	0038	3.81	1
007447407	ACT	LI1	0351-1 PCT.	0495	0055	11.11	0
007447407	ACT	LI2	0175-2 PCT.	0364	0021	5.77	2
007447407	ACT	LU1	0351-1 PCT.	C515	0015	2.91	0
007447407	ACT	LU2	0175-2 PCT.	0552	0020	3.62	2
007447407	ACT	TE1	0351-1 PCT.	0375	0023	6.13	0
007447407	ACT	TE2	0175-2 PCT.	0554	0021	3.79	2

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515603 DETECTOR 0000D4 SPECIES RHESUS/MONKEY DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	0666	0014	0011	2.10	1.65	0
	A+T		***NO MATCH***	0588	0014	0010	2.38	1.70	0
	A-C		SALINE	0838	0011	0018	1.31	2.15	0
	ACP	LI	DMN 90 UM/ML	0690	0017	0012	2.46	1.74	0
	ACP	LU	DMN 90 UM/ML	0647	0018	0014	2.78	2.16	0
	ACP	TE	DMN 90 UM/ML	0677	0027	0014	3.99	2.07	0
007447407	ACT	LI1	0005-0 PCT.	0573	0017	0019	2.97	3.32	0
007447407	ACT	LI2	0025-1 PCT.	0648	0014	0003	2.16	0.46	3
007447407	ACT	LU1	0005-0 PCT.	0712	0011	0020	1.54	2.81	0
007447407	ACT	LU2	0025-1 PCT.	0642	0014	0015	2.18	2.34	0
007447407	ACT	TE1	0005-0 PCT.	0817	0012	0011	1.47	1.35	0
007447407	ACT	TE2	0025-1 PCT.	0738	0008	0019	1.08	2.57	0